

Common Status and Structure Data (CSSD)

A component of the NextGen Collaborative ATM (CATM) solution set

Date: November, 2008



Federal Aviation
Administration

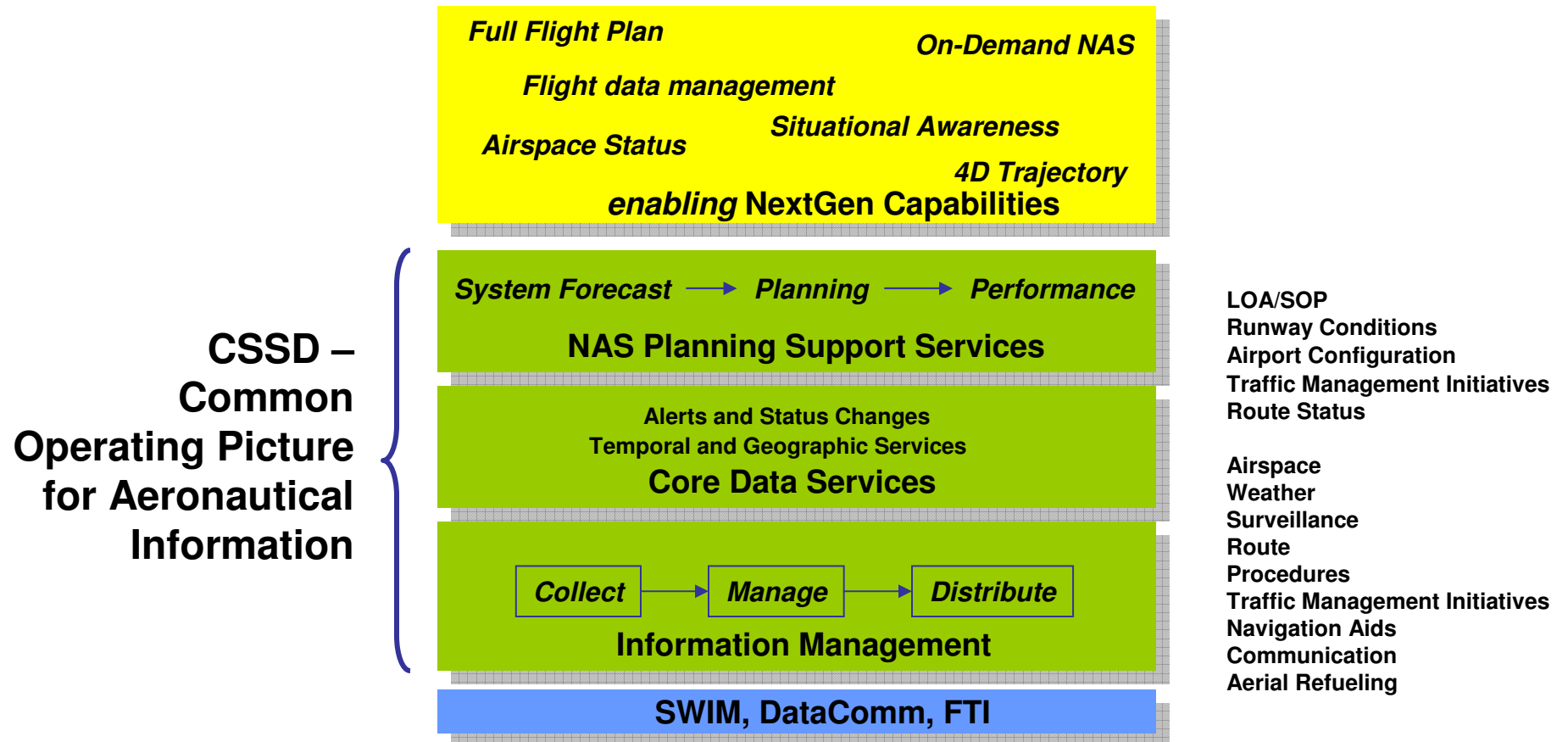


CSSD – Mission Need

- **Problem Statement:** There is not a common information and service foundation to capture digital flow constraint information, advisories and traffic management initiatives that is necessary to support current and future (NextGen) needs.
 - Not available – for example, airport configuration,
 - No “one stop shop” – NOTAM, airspace, runway visual range...
 - Not standardized – textual NOTAMS, paper LOAs, screen scrape web
 - Not digital – unsuitable for computer interpretation
- **Goal:** To create an infrastructure for a single and reliable aeronautical information exchange service to be used for providing a common operating picture of aeronautical information to support air traffic management. The delivery of an aeronautical information common operating picture involves Aeronautical Information Management (AIM), En Route, Terminal, Flight Services, Traffic Flow Management (TFM), Aviation Weather Office, and others who will deliver and consume information about the status of the NAS to improve flight operations.
 - Enable NAS performance forecasting and optimization
 - Enable integrated pilot briefings
 - Enable full flight planning
 - Enable performance based navigation
 - Enable NAS performance measurement
 - Enable pro-active management of NAS resources

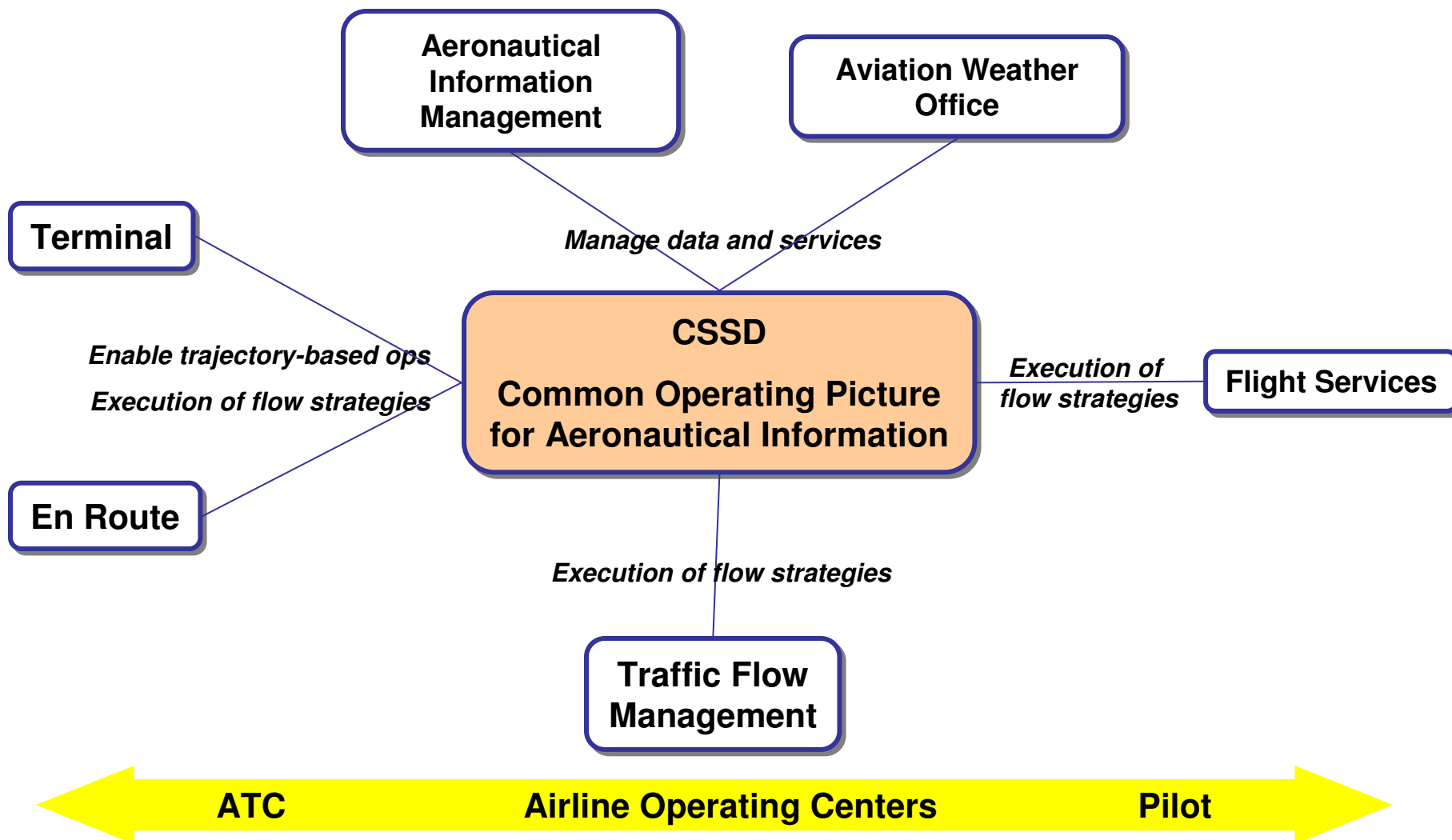


CSSD Vision



CSSD provides the aeronautical information and support services upon which many NextGen capabilities depend

CSSD – Community



CSSD – Expected Benefits

- **Realize safety benefits**
 - Remove data entry redundancies and potentials for error.
 - Reduction in accidents attributable to missing, conflicting, or poorly organized information.
 - Pilot briefing
 - NAS flow constraints and Restrictions
 - Airspace Violations
- **Realize operational/maintenance cost savings**
 - Airplane and ATC operator savings with better information management and services
 - Eliminate need for continual multiple, manual data entry and quality checking.
 - improved flight planning and pilot briefing.
 - benchmarking and forecasting reduces departure and en route delays.
 - improved traffic and flow management.
- **Realize development cost savings**
 - Data modeling and user interface consolidation
 - Access to more accurate timely data and re-use of data services
- **Realize quicker return on investment for new features**
 - More rapid development and deployment of new features
- **Gateway development between static and operational networks**



CSSD – Execution and Operation Assumptions and Constraints

- **Digital data management**
 - Create, edit and analyze digital information
 - Increase information quality and consistency
 - Use of AIXM, OGC standards, and other common exchange models for describing information where applicable
 - Identify reuse potential in existing SWIM services as well as in the SWIM architecture
- **Standardized workflow – Supporting Operations**
 - Single authoritative source (Common OP)
 - Internal and external customers...
- **Positioned for future capabilities**
 - Be informed by and integrate with NextGen goals
- **Improve policies**
 - Enables FAA to be responsible steward for targeted elements including SOP/LOA, Runway conditions information, etc (avoiding current confusion about definitions and shapes)
 - Centralize storage and management of all digital information for targeted elements
 - Provide infrastructure for evaluation and analysis to inform operational & policy decisions



CSSD – Objectives and Strategies

- **As a first step CSSD will develop a concept of operations and complete high system engineering to validate and scope the concept of operations (ConOps):**
 - Analyze the use of a cross-domain data brokerage or information exchange capability to collect, configuration management and distribute a common picture of aeronautical information between ATM stakeholders.
 - Generate list of scenarios/data sets for exploratory evaluation.
 - Perform companion analysis of architectural products affected (SWIM and other dependencies as determined by scenario/data set)
- **The second project phase will model information flow (LOA/SOP, Runway Configurations and Status, Flight Object Aeronautical Information) for identified scenarios.**
 - Sample and evaluate how information is represented and accessed as well as flow and dependencies in a conceptual schema for the as-is scenario information system and provide recommendations and a conceptual model for the “To Be” scenario information exchange. This will be used to create detailed joint requirements for scenario/data set
- **In the third project phase we will develop a prototype for scenario digital data capture tools and develop CSSD system infrastructure.**
 - Develop scenario prototype acquisition strategy and contract
 - Development of CSSD system Infrastructure including service registry, data warehouse, and associated components for Information Management System and Distributed Platform bridging components/communication gateways to interface with existing and prototype data sources and services.
 - Initiate Tech Transfer of WITI including requirements development, a transition analysis, and a tech transfer plan.



CSSD – Program Organization

FY09 Milestones Schedule

CATM Acceleration		
#	Fiscal Year 2009 Milestones (Description and Product)	Date
1	Program Plan for CSSD scope	T+4 months
2	CSSD ConOps & Enterprise Architecture	T+7 months
3	CSSD Requirements & Constraints Document	T+7 months
4	CSSD List of Scenarios	T+7 months
5	Existing data model & recommendations report for leading scenarios	T+10 months
6	Acquisition strategy and contract for scenario digital data capture tools	T+10 months
7	Data/exchange model & requirements recommendations for proposed information exchange of scenario data	T+12 months
8	SWIM-compliant common operating picture architecture	T+12 months
9	Acquisition strategy and contract for SWIM-compliant common operating picture architecture infrastructure (service registry, data warehouse, etc)	T+12 months
10	Requirements Document for WITI Tech Transfer	T+12 months
11	Transition Analysis Report for WITI Tech Transfer	T+12 months
12	Technology Transfer Plan for WITI Tech Transfer	T+12 months



CSSD – Program Organization

FY09 Obligations

CATM Acceleration		
Fiscal Year 2009 Obligations		
Activities in support of Common Status and Structure Data	Effort	
Program Management	Program support, schedule, reporting	
System Engineering and Concept Development	Articulation of high level gaps & requirements ATO-R ATO-T ATO-E	
Information Engineering	Data Modeling of leading scenarios	
Concept elaboration and validation	Articulation of detailed scenario requirements ATO-R ATO-T ATO-E	
Prototype Development and Demonstration	Acquisition strategy and contract	
Technology Transfer	Development of Requirements, Transition Analysis, and Tech Transfer Plan for WITI	



Next Steps

- **Program Plan (Deliverable - 01/09)**
 - Analyze the use of a cross-domain data brokerage or information exchange that serves as a companion to the internal AIM infrastructure and bridges the gaps between organizations in terms of the flow of aeronautical information.
 - Generate list of scenarios/data sets for exploratory evaluation.
 - Perform companion analysis of architectural products affected (SWIM, ERAM, URET and other dependencies as determined by scenario/data set)
- **ConOps development (Deliverable - 03/09)**
 - Create High Level CSSD ConOps & Enterprise Architecture
 - Create High level CSSD Requirements & Constraints Document
 - Generate List of Scenarios

